

Amend the claims as shown on the attached: First Amendment: Claims Marked Up.
Amend Figure 3 of the drawings as shown on the attached: Amended Drawing, page 3/6.

REMARKS

Reexamination and reconsideration of this application as amended is requested. By this amendment: Claims 8 and 16-20 have been canceled, Claims 1, 3, 6, 11, and 14 have been amended, and new claims 21-25 have been added. Claims 1-7, 9-15 and 21-25 remain in the application.

Figure 3 of the drawing has been amended to move section 8-8 to the bend zone 13 as supported in the Specification discussion of Figures 4 and 10.

Claim Objections

Objection was made to Claim 6, line 18: "a longitudinal" has been changed to --the longitudinal--.

Objection was made to Claim 11, line 16 regarding "a compression". The language has been changed.

In view of the above, the claim objections are seen to be overcome and withdrawal of the claim objections is requested.

Claim Rejections 35 USC 112

The claims have been rejected as indefinite due to the following terms:

- 1) "Longitudinal compressive force" is a compressive force on the panel in the longitudinal direction. The longitudinal direction is now defined in the claims as being the direction between the opening end and the hinge axis.
- 2) "At failure" the physical properties of a panel show abrupt change. For example, in this case, at failure, the panel will begin to show noticeable deformation and the resistance to compressive force decreases suddenly. It is believed this definition is a well-known and accepted engineering one.
- 3) "Compression line" has been deleted from the claims.
- 4) "Neutral bending axis" at a given location on the panel is the axis upon which a longitudinal

compressive force would not tend to produce a bending moment because the moments of inertia from the axis of the panel sections above and below the axis are equal. It is believed this definition is a well-known and accepted engineering one. Neutral bending axis is defined in the Specification on page 6, line 5 et seq, just before the paragraph beginning "Lid 10".

In view of the above, the 112 rejections are seen to be overcome and withdrawal of the 112 rejections is requested.

Anticipation/obviousness

As part review and part argument, Applicants invention is a refuse container lid that fails, but that fails in a prescribed place and in a prescribed manner "so as to spring back and return to its original configuration after being buckled."

The original claims were rejected as unpatentable in view of Goodwin (5,564,586), Taylor (Des. 395,106), and Taylor (4,771,940).

After careful consideration of the above-identified Official Action and the cited references, applicant has amended the application as indicated above to more specifically define the invention.

Claim 1, has been amended as follows:

1. (currently amended) A lid for covering at least a portion of a top opening of a refuse bin; the refuse bin having a top opening and lid mounting means for mounting said lid; said lid comprising:
 - a rectangular panel of resilient material including:
 - an upper side,
 - a lower side generally parallel to said upper side;
 - ~~a mid-section;~~
 - a hinge end including:
 - connection means for connecting to the lid mounting means such that said panel is rotatable about a hinge axis; and
 - an opening end opposite said hinge end and defining the longitudinal direction as

between said hinge end and said opening end; and

12 a mid-section between said hinge end and said opening end; said panel defined by a
plurality of longitudinal corrugations spanning substantially between said opening end and said
14 hinge end wherein, in lateral cross-section, mid-section of said panel comprises hills and valleys
and includes including a bend section at a predetermined lateral cross-section wherein the lower
16 portions a plurality of said valleys of said corrugations have a reduced cross-sectional area
resistance to bending as compared to said hills such that said panel fails from a longitudinal
18 compressive force on said opening end at failure ~~buckles said panel by buckling~~ upward at said
bend section.

The inclusions further define the invention. The inclusion that the panel is “of resilient material” is supported in the specification in the paragraph “Lid 10 is made of sufficiently resilient material so as to spring back and return to its original configuration after being buckled. Polypropylene and/or other thermoplastic olefin material have been found to produce good results.” The inclusion that the lower side of the panel is generally parallel to the upper side of the panel is supported by the drawings and throughout the specification. The inclusion that the longitudinal direction is defined as between the hinge end and the opening end is supported by the disclosure as consistent with the defined direction of the corrugations and as opposed to the lateral direction of the weakened bending sections as shown and discussed. For example the paragraph starting, “Panel 20 is further defined by a plurality of longitudinal corrugations 21 spanning substantially between opening end 60 and hinge end 50 creating a plurality of hills 22 and valleys 26.” The inclusion that the valleys have a “reduced resistance to bending” is supported throughout the specification and more specifically in the paragraph on page 7 beginning “As best seen in figures 4 and 8...” The other changes are seen to be editing for clarifications.

The lid as claimed in amended Claim 1 differs from Goodwin (5,564,586) in several respects. The lid of claim 1 has a “lower side generally parallel of said upper side” such at “said mid-section of said panel is of generally uniform thickness.” In contrast, the Goodwin lid has a lower side that does not generally parallel the upper side such that the thickness of the Goodwin panel differs considerably in the mid-section. The lid of Claim 1 includes “a bend section at a

predetermined lateral cross-section wherein a plurality of said valleys of said corrugations have a reduced resistance to bending as compared to said hills such that said panel fails from a longitudinal compressive force on said opening end by buckling upward at said bend section.” The Goodwin lid does not teach or describe any mechanism to promote buckling of the lid from longitudinal compressive force on a predetermined lateral cross-section. Goodwin lid has “reinforcing cups 22” on the lower side. There is no further explanation of their function. There is no disclosure or suggestion in Goodwin to provide the claimed bending section at predetermined lateral cross section, nor is it obvious therefrom.

The lid of amended claim 1 differs from Taylor (Des. 395,106) in that the lower side of Taylor is not “generally parallel to said upper side” as now claimed. The Taylor (Des. 395,106) lid does not teach or describe any mechanism to promote buckling of the lid from longitudinal compressive force on a predetermined lateral cross-section. There is no disclosure or suggestion in Taylor to provide the claimed bending section at predetermined lateral cross section, nor is it obvious therefrom.

The lid of amend Claim 1 differs from Taylor (4,771,940) in that the lower side of Taylor is not “generally parallel to said upper side” as now claimed. Taylor has longitudinal ribs on the upper surface and transverse ribs on the lower surface. These, according to Taylor, provide “additional stiffness and durability.” Taylor does not disclose nor suggest that the lid “includes a bend section at a predetermined lateral cross-section wherein a plurality of said valleys of said corrugations have a reduced resistance to bending such that said panel fails from a longitudinal compressive force on said opening end by buckling upward at said bend section”, nor is it obvious therefrom.

Sanders (4,949,866) shows a two-piece lid embodiment having a top with ribs on the top and bottom of different orientation and a one piece embodiment having longitudinal ribs. Sanders does not disclose nor suggest that the lid “includes a bend section at a predetermined lateral cross-section wherein a plurality of said valleys of said corrugations have a reduced resistance to bending such that said panel fails from a longitudinal compressive force on said opening end by buckling upward at said bend section”, nor is it obvious therefrom.

Fagliano (4,151,928) does not disclose nor suggest that the lid “includes a bend section at a predetermined lateral cross-section wherein a plurality of said valleys of said corrugations have a reduced resistance to bending such that said panel fails from a longitudinal compressive force on said opening end by buckling upward at said bend section,” nor is it obvious therefrom.

Applicant's invention as now claimed in amended Claim 1 is not obvious in view of the references since none of the references, either alone or in combination, disclose or suggest such structure.

In view of the amendment and remarks, Claim 1, as amended, is seen to be in condition for allowance and allowance is requested.

Skipping ahead to new claims 21-25 because they are ultimately dependent upon Claim 1, new Claims 21 and 22, dependent upon claim 1, include more limited structure related to the “reduced resistance to bending”.

New Claims 21 and 22, reciting further patentable subject matter and being ultimately dependent upon now allowable Claim 1, are also seen to be in condition for allowance and allowance is requested.

New Claim 23, dependent upon Claim 1, includes that “in lateral cross-section, said mid-section of said panel comprises hills and valleys of generally uniform thickness”.

New Claims 24 and 25, dependent upon claim 23, include more limited structure related to the “reduced resistance to bending”.

New Claims 23-25, reciting further patentable subject matter and being ultimately dependent upon now allowable Claim 1, are also seen to be in condition for allowance and allowance is requested.

Claim 3 has been amended to change “compression line” to --straight line-- for clarity. The change is supported by Figure 7 of the drawing.

Claims 2-5, reciting further patentable subject matter and being ultimately dependent upon now allowable Claim 1, are also seen to be in condition for allowance and allowance is requested.

Independent Claim 6 has been amended to include the language of Claim 3. Independent Claim 6 is similar to Claim 1 and has been amended similarly and differs primarily in that in the claimed panel “a straight line between said front end and said hinge axis is below the neutral bending axis of said lid substantially over the entire length of said lid such that a longitudinal compressive force on said opening end at failure buckles tends to buckle said panel upward and including a bend section at a predetermined lateral cross-section of said mid-section wherein said corrugations have a reduced resistance to bending such that a the longitudinal compressive force on said opening end at failure buckles said panel upward at said bend section.”

Thus, Claim 6 is similar to claim 1 but includes that the panel is predisposed to buckle upward because of the location of the corrugations and front end and hinge end and includes that it will fail in longitudinal compression by buckling upward at the lateral bend section of “of reduced resistance to bending.”

Independent Claim 6, as amended, is seen to be in condition for allowance for the reasons cited with respect to claim 1. Applicant's invention as now claimed in amended Claim 6 is not obvious in view of the references since none of the references, either alone or in combination, disclose or suggest such structure and structural limitations. Claim 6 is seen to be in condition for allowance and allowance is requested.

Claim 8 has been cancelled.

Claims 7, 9, and 10, reciting further patentable subject matter and being ultimately dependent upon now allowable Claim 6, are also seen to be in condition for allowance and allowance is requested.

Independent claim 11 has been amended to include that the panel lower side is “generally

parallel to said upper side.” The corrugations in Claim 11 approximate “a sine wave in lateral cross-section and spanning substantially between said opening end and said hinge end” and “a straight line between said opening end and said hinge end is below the neutral bending axis of said lid over the substantial length of said lid such that a longitudinal compressive force on said opening end, at failure, tends to buckle said panel upward and, at failure, said panel buckles upward.”

Applicant's invention as now claimed in amended Claim 11 is not obvious in view of the references since none of the references, either alone or in combination, disclose or suggest such structure and structural limitations. Claim 11 is seen to be in condition for allowance and allowance is requested.

Claims 12 and 13, reciting further patentable subject matter and being ultimately dependent upon now allowable Claim 11, are also seen to be in condition for allowance and allowance is requested.

Independent Claim 14 has been amended to include that the panel's lower side is “generally parallel to said upper side”, to define the longitudinal direction and to include the teaching of Figure 11. Support for the inclusion is found in figure 11 and in the Specification with reference to Figure 11. Claim 14 now includes that the panel is defined “by a plurality of longitudinal, upwardly-arched corrugations spanning substantially between said opening end and said hinge end such that a longitudinal compressive force on said opening end tends to buckle said panel upward and wherein, in lateral cross-section, said mid-section of said panel is of generally uniform thickness and comprises hills and valleys and includes a bend section at a predetermined lateral cross-section wherein a plurality of said hills of said corrugations are lowered resulting in a reduced resistance to bending such that said panel fails from a longitudinal compressive force on said opening end by buckling upward at said bend section

In amended Claim 14, the panel is longitudinally arched such that it will naturally tend to bow upward from a longitudinal compressive force. To make the panel fail by buckling upward at

a predetermined lateral bend section, the hills are lowered on that section.

Applicant's invention as now claimed in amended Claim 14 is not obvious in view of the references since none of the references, either alone or in combination, disclose or suggest such structure and structural limitations. Claim 14 is seen to be in condition for allowance and allowance is requested.

Claim 15, reciting further patentable subject matter and being ultimately dependable upon now allowable Claim 11, is also seen to be in condition for allowance and allowance is requested.

In view of the amendment and the remarks Claims 1-7, 9-15 and 21-25 are seen to be in condition for allowance and allowance is requested.

The Examiner is requested to contact the undersigned at (619) 234-4034 if it will aid in the disposition of this application.

Sincerely,

A handwritten signature in black ink, appearing to read 'Calif Kip Tervo', with a long, sweeping flourish extending from the end of the signature.

Calif Kip Tervo

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ANNOTATED MARKED UP DRAWING
 PROPOSED AMENDMENT

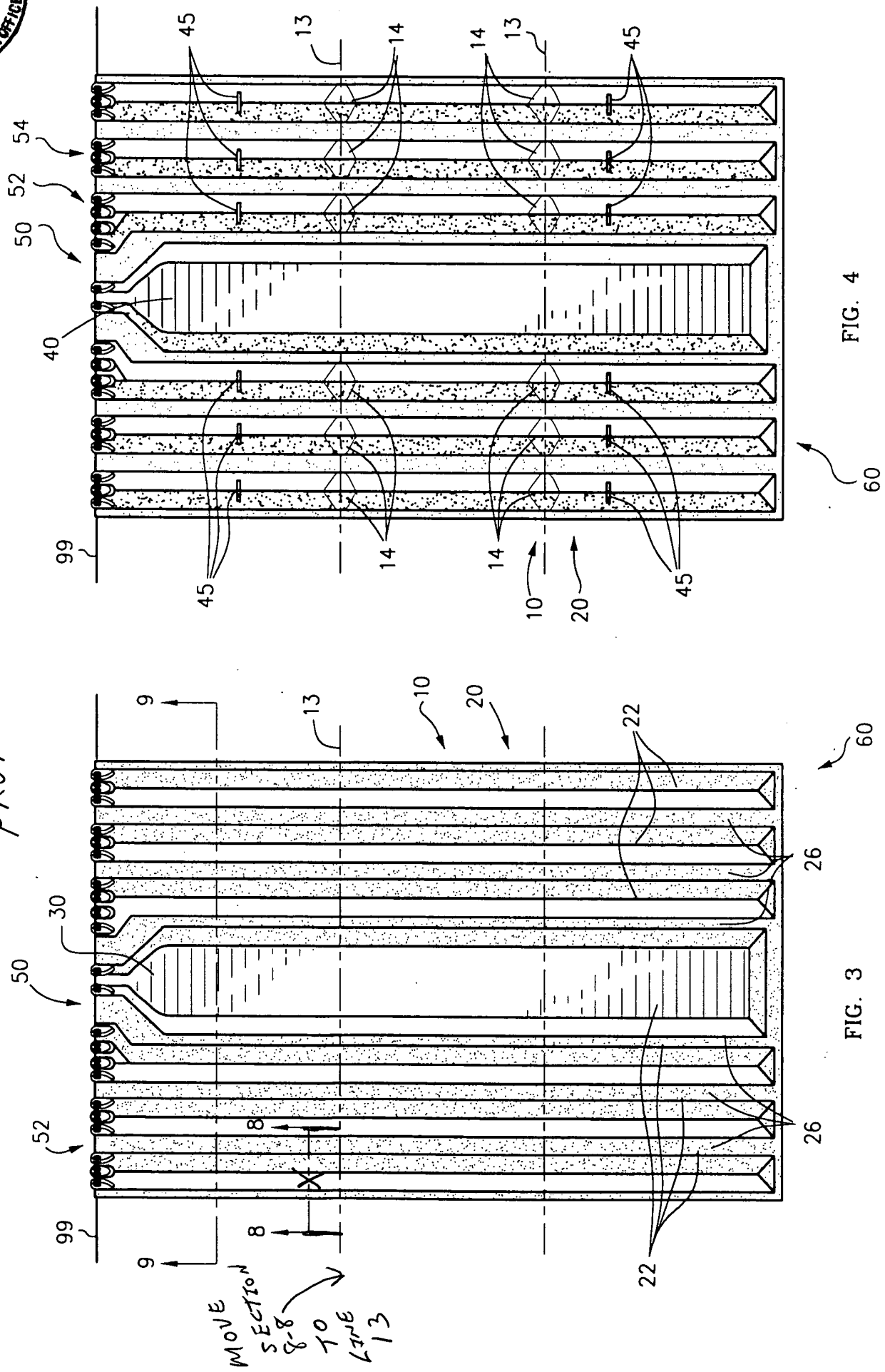
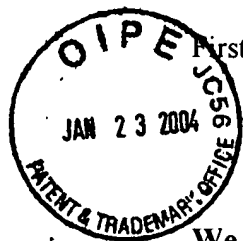


FIG. 4

FIG. 3



REFUSE CONTAINER LID

We claim:

1. (currently amended) A lid for covering at least a portion of a top opening of a refuse bin; the refuse bin having a top opening and lid mounting means for mounting said lid; said lid comprising: a rectangular panel of resilient material including:

an upper side,
a lower side generally parallel to said upper side;
~~a mid-section~~;
a hinge end including:
connection means for connecting to the lid mounting means such that said panel is rotatable about a hinge axis; ~~and~~
an opening end opposite said hinge end and defining the longitudinal direction as between said hinge end and said opening end; and
a mid-section between said hinge end and said opening end; said panel defined by a plurality of longitudinal corrugations spanning substantially between said opening end and said hinge end wherein, in lateral cross-section, said mid-section of said panel is of generally uniform thickness and comprises hills and valleys and includes including a bend section at a predetermined lateral cross-section wherein the lower portions a plurality of said valleys of said corrugations have a reduced cross-sectional area resistance to bending such that said panel fails from a longitudinal compressive force on said opening end at failure buckles said panel by buckling upward at said bend section.

2. (original) The lid of Claim 1 wherein:

said longitudinal corrugations are longitudinally upwardly-arched.

3. (currently amended) The lid of Claim 1 wherein:

a ~~compression~~ straight line between said front end and said hinge axis is below the neutral bending axis of said lid substantially over the entire length of said lid such that a longitudinal compressive force on said opening end will tend to bow said lid upward.

4. (original) The lid of Claim 1 further including:

one or more additional bend sections.

5. (original) The lid of Claim 1 wherein:

said mid-section of said panel is upwardly laterally arched.

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6. (currently amended) A lid for covering at least a portion of a top opening of a refuse bin; the refuse bin having a top opening and lid mounting means for mounting said lid; said lid comprising:

a rectangular panel of resilient material including:

an upper side,

a lower side generally parallel to said upper side;

~~a mid-section;~~

a hinge end including:

connection means for connecting to the lid mounting means such that said panel is rotatable about a hinge axis; ~~and~~

an opening end opposite said hinge end and defining the longitudinal direction as between said hinge end and said opening end; and

a mid-section between said hinge end and said opening end; said panel defined by a plurality of longitudinal corrugations spanning substantially between said opening end and said hinge end ~~such that wherein~~ in lateral cross-section, said mid-section of said panel is of generally uniform thickness and comprises hill and valleys and wherein a straight line between said front end and said hinge axis is below the neutral bending axis of said lid substantially over the entire length of said lid such that a longitudinal compressive force on said opening end at failure buckles tends to buckle said panel upward and including a bend section at a predetermined lateral cross-section of said mid-section wherein said corrugations have a reduced resistance to bending such that a the longitudinal compressive force on said opening end at failure buckles said panel upward at said bend section.

7. (original) The lid of Claim 6 wherein:

said longitudinal corrugations are longitudinally upwardly-arched.

8. (canceled).

9. (original) The lid of Claim 6 further including:

one or more additional bend sections.

10. (original) The lid of Claim 6 wherein:

said mid-section of said panel is upwardly laterally arched.

11. (currently amended) A lid for covering at least a portion of a top opening of a refuse bin; the

refuse bin having a top opening and lid mounting means for mounting said lid; said lid comprising:

2 a rectangular panel of resilient material including:

an upper side,

4 a lower side generally parallel to said upper side;

a hinge end including:

6 connection means for connecting to the lid mounting means such that said panel is rotatable about a hinge axis; and

8 an opening end opposite said hinge end and defining the longitudinal direction as between said hinge end and said opening end ~~defining a compression line between said opening end and said hinge axis~~; said panel defined by a plurality of longitudinal corrugations approximating a sine wave in lateral cross-section and spanning substantially between said opening end and said hinge end; ~~said opening end and said hinge end disposed such that a compression line therebetween wherein a straight line between said opening end and said hinge end is below the neutral bending axis of said lid over the substantial length of said lid such that a longitudinal compressive force on said opening end, at failure, buckles tends to buckle said panel upward and, at failure, said panel buckles upward.~~

12. (original) The lid of Claim 11 wherein:

2 said longitudinal corrugations are longitudinally upwardly-arched.

✓ 13. (original) The lid of Claim 11 wherein:

2 said mid-section of said panel is upwardly laterally arched.

14. (currently amended) A lid for covering at least a portion of a top opening of a refuse bin; the refuse bin having a top opening and lid mounting means for mounting said lid; said lid comprising:

2 a rectangular panel of resilient material including:

4 an upper side,

a lower side generally parallel to said upper side;

6 ~~a mid-section~~;

a hinge end including:

8 connection means for connecting to the lid mounting means such that said panel is rotatable about a hinge axis; and

10 an opening end opposite said hinge end and defining the longitudinal direction as between said hinge end and said opening end; and

12 a mid-section between said opening end and said hinge section; said panel defined

14 by a plurality of longitudinal, upwardly-arched corrugations spanning substantially between said
opening end and said hinge end such that a longitudinal compressive force on said opening end at
failure buckles tends to buckle said panel upward and wherein, in lateral cross-section, said mid-
16 section of said panel is of generally uniform thickness and comprises hills and valleys and includes
a bend section at a predetermined lateral cross-section wherein a plurality of said hills of said
18 corrugations are lowered resulting in a reduced resistance to bending such that said panel fails
from a longitudinal compressive force on said opening end by buckling upward at said bend
20 section.

15. (original) The lid of Claim 14 wherein:

2 said mid-section of said panel is upwardly laterally arched.

16-20. (cancelled)

21. (new) The lid of Claim 1 wherein:

2 at said bend section, a plurality of said valleys of said corrugations have a reduced moment of
inertia compared to said hills.

22. (new) The lid of Claim 1 wherein:

2 at said bend section, a plurality of said valleys of said corrugations have a reduced thickness.

23. (new) The lid of Claim 1 wherein:

in lateral cross-section, said mid-section of said panel comprises hills and valleys of generally
uniform thickness.

24. (new) The lid of Claim 23 wherein:

2 at said bend section, a plurality of said valleys of said corrugations have a reduced thickness.
